
Subject knowledge in the health sciences library: an online survey of Canadian academic health sciences librarians

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Objectives: This study investigated whether Canadian academic health sciences librarians found knowledge of the health sciences to be important and, if so, how they acquired and maintained this knowledge.

Methods: Data were gathered using a Web-based questionnaire made available to Canadian academic health sciences librarians.

Results: Respondents recognized the need for subject knowledge: 93.3% of respondents indicated that subject knowledge was "very important" or "somewhat important" to doing their job. However, few respondents felt that holding a degree in the health sciences was necessary. Respondents reported devoting on average more than 6 hours per week to continuing education through various means. Reading or browsing health sciences journals, visiting Websites, studying independently, and participating in professional associations were identified by the largest number of participants as the best ways to become and stay informed.

Conclusions: Although more research needs to be done with a larger sample, subject knowledge continues to be important to Canadian academic health sciences librarians. Continuing education, rather than formal degree studies, is the method of choice for obtaining and maintaining this knowledge.

INTRODUCTION

The need for science librarians to be educated in the fields that they serve has been debated for at least twenty years. In 1984, Krupp stated that if librarians without degrees in science or technology were given science and technology responsibilities such as collection development and reference, the quality of these services might "suffer tragic damage" [1]. Others, such as Haselbauer, argued that while subject knowledge was important, continuing education efforts by librarians could provide them with the background to do their jobs well [2].

Qureshi's 1990 survey was one of the few to examine subject knowledge as it applies to health sciences librarianship. His study of health sciences librarians found a need for subject knowledge; some respondents indicated that their formal education had been in non-health sciences areas and that they had to ac-

quire subject knowledge on the job to do their work [3].

Since 1990, information retrieval has changed greatly. As Morris-Knower argues, perhaps librarians' ability to carry out keyword searches of the library catalog and the Internet means that their subject knowledge is no longer as important as it once was, because they are able to find information for a patron without necessarily understanding it [4]. The decline of mediated searching could have similar implications. Because library patrons are now able to search databases such as MEDLINE independently, librarians might be doing less searching than in the past and therefore not require the same level of subject knowledge. Also, the abundance of online information resources might have changed the level of knowledge required for other library tasks such as collection development. For example, it is relatively easy to find timely book reviews through online sources such as Amazon, Books in Print, and Doody's. In the past, reviews were pub-

lished in print, and the greater difficulty of locating a relevant print review (and the time associated with waiting for a print review to be published) might have meant that librarians relied more on their own knowledge to determine whether a title was worth buying than they do at present.

On the other hand, that Davidoff and Florance felt it necessary in 2000 to call for the creation of a new group, the informationists, who would "have a clear and solid understanding of both information science and the essentials of clinical work," indicates that information professionals with knowledge of the health sciences are needed [5]. In 2002, Dalrymple urged medical librarians to acquire subject knowledge so as not to be bypassed by medical informaticians training in the informationist field [6].

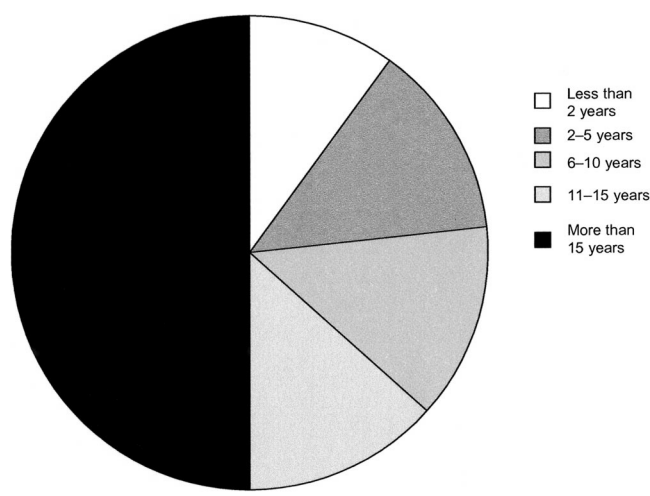
The informationist, though, is, as Shipman and Homan note, someone who works "in context," thus outside a library [7]. Most academic health sciences librarians work in libraries and so may not feel the same need to acquire subject knowledge as do informationists. However, many act as "expert searchers" for the researchers and faculty at their institution. In its 2003 policy statement on this topic, the Medical Library Association lists "subject domain knowledge and sensitivity to the professional information" and "ability to use both deductive and inductive reasoning combined with subject domain knowledge to respond to a desired outcome" as two of the skills and knowledge required by expert searchers, a role that it encourages medical librarians to take on [8].

How important, then, is subject knowledge to today's academic health sciences librarians, and how do they acquire it? This paper reports the findings of a Web-based survey designed to help answer these questions.

METHODOLOGY

The survey instrument was a brief questionnaire with fifteen questions and write-in sections in which individuals could provide additional information. The English-language version is in the appendix; the French-language version is available from the author. Before being distributed, the survey was reviewed and approved by the University of Saskatchewan Behavioural Research Ethics Board. In January 2004, an email message inviting recipients to complete a Web survey was sent to 100 health sciences librarians working at Canadian academic health sciences libraries. The cover letter was sent in English or French depending on the language of the institution at which the recipient worked, but all respondents were given the option of answering either the French or the English version of the questionnaire. Possible respondents were identified by consulting library Websites to determine which librarians had health sciences responsibilities. The survey was sent to all librarians identified through this process. Because the survey was completed on the Web, respondents remained anonymous.

Figure 1
Years of employment in health sciences or sciences libraries



RESULTS

Of the 100 email messages sent, 5 were sent to obsolete addresses. Thirty-one responses were received, but 1 was discarded because the respondent no longer had health sciences responsibilities. Of the 94 health sciences librarians who received the email, 30 responded, a response rate of 32%. As shown in Figure 1, the majority of respondents had worked in health sciences or sciences libraries for more than 10 years.

The responsibilities of the respondents broke down as follows: 70.0% user education, 66.7% reference, 50.0% collection development, 40.0% administration, 10.0% interlibrary loan, and 6.7% cataloging.

Educational background

In his study of chemistry librarians, Hooper-Lane stated that "few would disagree that the best way to get a grounding in science is to get a degree in it" [9]. However, as with Hooper-Lane's study, very few of the respondents to this survey had an academic background in the areas in which they provided service. Figure 2 shows the number of respondents holding degrees in each area.

Only 2 respondents (6.7%) held a degree in a health sciences field such as nursing or medicine. Eight respondents (26.7%) held a degree in a scientific discipline such as biology or mathematics, 5 (16.7%) of these were in the biological sciences. Many respondents held degrees in more than 1 area, therefore, the question had more than 30 responses. These results were similar to those of Qureshi: he found that of 102 American health sciences librarians, none held degrees in the health sciences. In the "pure sciences," biology was the most commonly held degree, with 14 of the 29 respondents holding a degree in that field [3].

Most librarians did not feel that holding a degree in a health sciences field was important to carrying out their job, as can be seen in Figure 3. Twenty-one re-

Figure 2
Number of respondents holding degrees in various disciplines

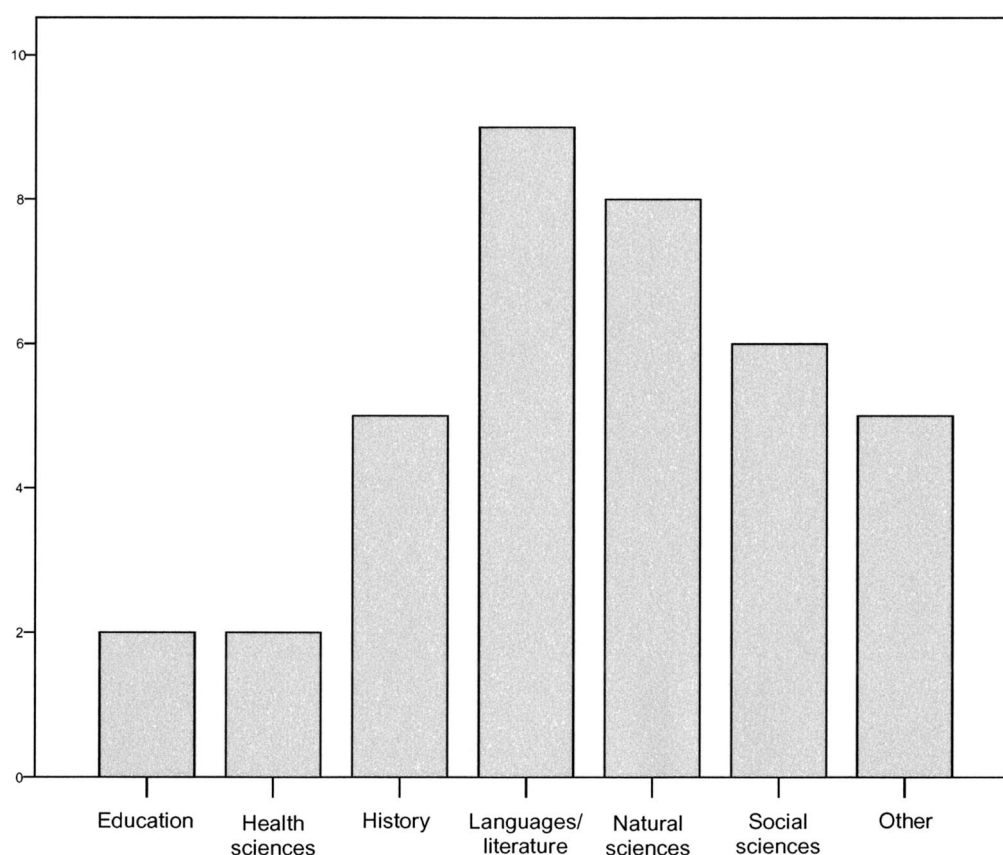
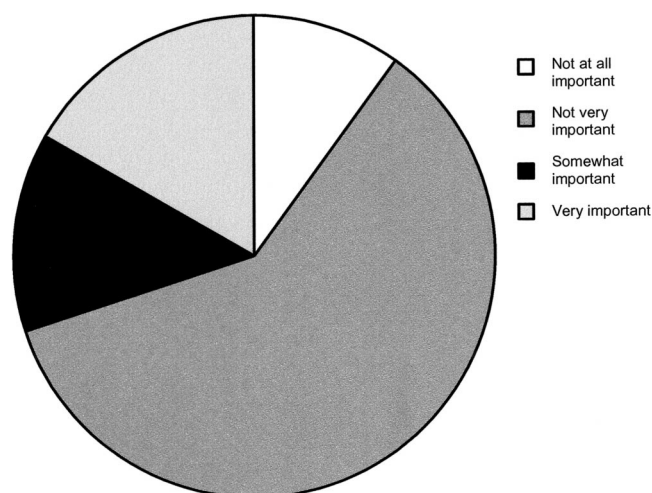


Figure 3
Responses to the question "How important do you feel it is that your position be filled by someone who has a degree in a health sciences field?"



spondents (70.0%) felt that this was "not very important" or "not at all important." One might expect librarians with this background to value it most highly; however, only one of the two librarians who held a degree in the health sciences felt that this was "very important." Though not statistically significant because of the small sample size, it was interesting to note that the librarians with biology degrees felt this was most important; all five felt it was "very important" or "somewhat important."

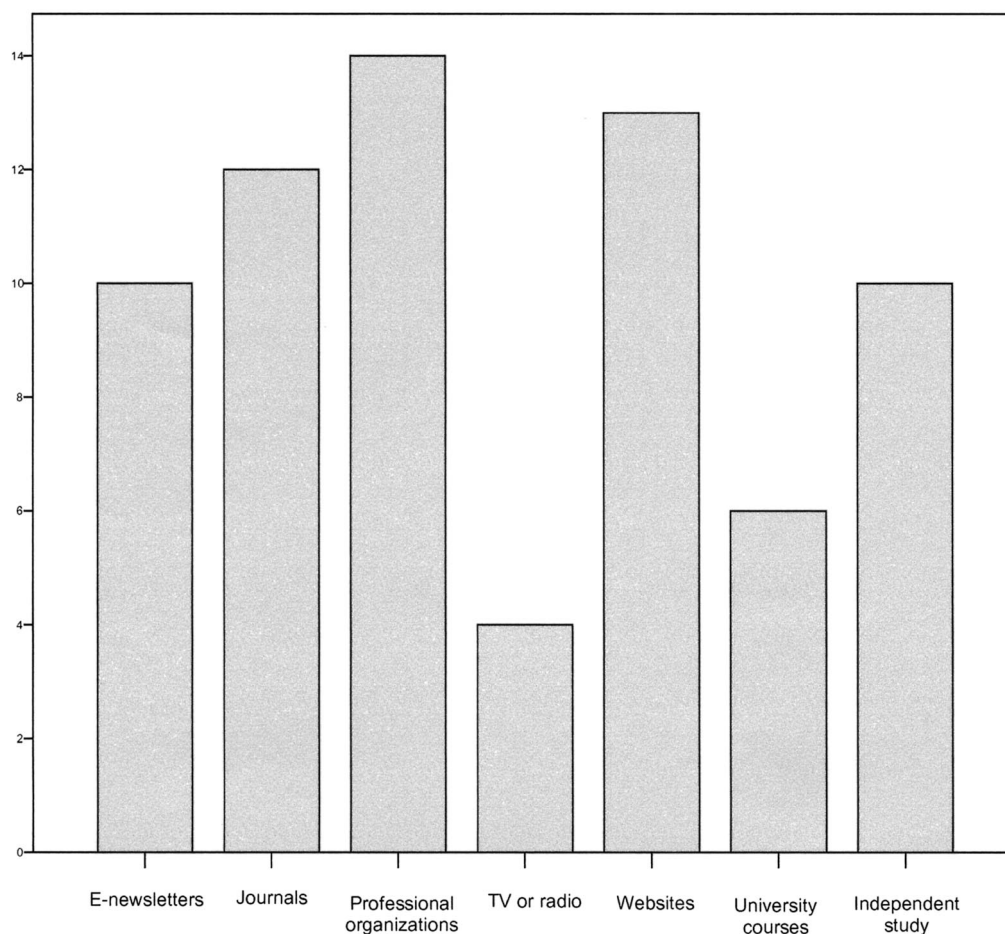
When asked to list areas besides library sciences and the health sciences that would help them to do their jobs, respondents listed many others. The most commonly mentioned was administration and management. Because 40.0% of the respondents had administrative responsibilities, this is not surprising. Other areas mentioned were computer science and technology; education; social sciences such as psychology, natural sciences, statistics, and research methods; and the "liberal arts."

Currency

The respondents did find that keeping up with the scientific and medical literature was important to doing their jobs; 93.3% felt it was "somewhat" or "very important."

Figure 4

Number of respondents rating various methods of continuing education as "very useful"



Hours per week devoted to continuing education

The mean amount of time spent on continuing education activities was 6.0 hours. However, the range was huge: the highest value was 25.0 hours per week and the lowest was 0.5 hours per week. One respondent did not provide an answer to this question.

The number of years working in a health sciences or science library did not seem to be strongly correlated with the number of hours spent per week on continuing education activities. The Spearman rank correlation for these two variables was -0.088 , where values near $+1$ would indicate that a greater number of years of work was associated with a greater number of hours per week, while values near -1 would indicate that a greater number of years of work were associated with a lower number of hours spent per week (an inverse relationship). Instead, years of service and hours spent on continuing education showed no clear association. Thus, it was not just new librarians who found a need for continuing education.

Ways to become informed

As can be seen in Figure 4, the greatest number of respondents rated participating in professional orga-

nizations as a "very useful" activity, although many respondents highly rated browsing Websites and journals or magazines.

Discussion lists. Reading email discussion lists was described by 73.3% of respondents as being "very useful" or "somewhat useful." CANMEDLIB, the email discussion list of the Canadian Health Libraries Association, was by far the most popular of the discussion lists; 70.0% of respondents subscribed to it. MEDLIB-L, the email discussion list of the Medical Library Association, was the next most popular; 36.7% of respondents subscribed to it. Another 16.7% did not subscribe to any of the listed email discussion lists. Bibliosanté, a French-language list hosted in France, and the discussion group run by the health section of Quebec's library association, l'Association pour l'avancement des sciences et des techniques de la documentation (ASTED), were each subscribed to by 10.0% of respondents.

Respondents listed a large number of other library discussion lists to which they subscribed. Among the ones mentioned by other respondents, evidence-based medicine or librarianship featured prominently: three re-

spondents mentioned EVIDENCE-BASED-LIBRARIES, two listed EVIDENCE-BASED-MEDICINE, another listed EBHCLIB-L, and a further respondent did not specify which evidence-based discussion list he or she subscribed to. LIS-medical, the discussion list of the University Medical School Libraries Group, based in the United Kingdom and Ireland, was mentioned by two respondents.

Journals. Respondents indicated that reading or browsing journals was a helpful activity: 93.3% of respondents reported that it was "very useful" or "somewhat useful." Most librarians spent time reading or browsing journals. The *Canadian Medical Association Journal* (CMAJ) and *JAMA* were both read on a monthly basis by 53.3% of the respondents; *BMJ* and *New England Journal of Medicine* were both read monthly by 50.0% of respondents. *The Lancet* was read monthly by 43.3% of respondents and *Nature* by 30.0%. A further 30.0% reported not reading any of the listed journals on a monthly or more frequent basis.

Few of the listed monthly journals were read on a quarterly or more frequent basis: 76.7% of respondents reported not reading any of them. *Canadian Nurse*, the most selected title, was read or browsed by 10.0% of respondents on a quarterly or more frequent basis.

Of the other journals that respondents wrote in, twenty-two different titles were listed. The only ones that were mentioned by more than one respondent were the *Canadian Journal of Occupational Therapy* and the *BC Medical Journal*; two respondents reported reading or browsing these.

Membership in professional associations. Twenty-eight (93.3%) respondents rated membership in professional associations as a "very useful" or "somewhat useful" way to become informed about the fields they served. The Canadian Health Libraries Association/ Association des bibliothèques de la santé du Canada was the association to which most respondents belonged: 90.0% of respondents were members. However, a large percentage of respondents indicated that they belonged to 2 other professional associations: Medical Library Association (36.7%) and ASTED's Bibliosanté section of Quebec's library association (13.3%). A further 6.7% of respondents did not belong to any of the listed associations.

Membership in the Academy of Health Information Professionals. Only 1 respondent reported being a member of the Academy of Health Information Professionals, the professional development program of the Medical Library Association. In their survey, Baker et al. found that only 34.8% of respondents from MLA's Midwest Chapter indicated they were members [10]. Because this program is administered by the Medical Library Association, it is not surprising that the numbers are even lower in Canada.

Television shows and listening to radio shows on scientific or health topics. Nineteen respondents (63.3%)

stated that watching or listening to television or radio shows on scientific or health topics was "very useful" or "somewhat useful," and 56.7% of respondents reported watching or listening to one of the listed shows on a monthly or more frequent basis. The most popular were the Canadian Broadcasting Corporation's radio show *Quirks and Quarks*, which was mentioned by 33.3%, the Canadian Broadcasting Corporation's television show *The Nature of Things* (23.3%), the Public Broadcasting Service's television show *Nova* (16.7%), and Radio-Canada's television show *Découverte* (13.3%). No other television or radio shows were mentioned by more than one respondent, although two did mention watching the Discovery Channel.

Websites. Visiting Websites was listed by 93.3% of respondents as being a "very useful" or "somewhat useful" activity. Respondents were asked to list the sites they visited on a weekly or more frequent basis. From the Websites provided by some respondents, it was unclear whether they were visiting the sites to answer reference questions or for their own continuing education. Sites such as CINAHL and PubMed (one respondent visited the latter twenty-five times a day) were listed, and, while the respondents could be visiting them to do their own research, it seems more likely that they were using them to answer reference questions.

However, some sites that might be used for continuing education were listed. These included those of the national or provincial health ministries (by three respondents) and various regional health authorities (by two respondents). Three respondents mentioned visiting health or science sections of news sources such as Google News, Canada.com, and the Canadian Broadcasting Corporation. Consumer health sites such as Canadian Health Network and MedlinePlus were also listed by three respondents.

Courses. Taking university courses was felt by 66.7% of respondents to be "very useful" or "somewhat useful." A computer error meant that some respondents were not required to respond to this question. Five respondents indicated that they were currently taking, had just taken, or were registered for a course. Medical informatics, medical terminology, research methods, and evidence-based medicine were the areas of study.

Independent study. Independent study, defined here as "study of textbooks, etc., without being registered in a course" was felt by 93.3% of respondents to be "very useful" or "somewhat useful."

Other activities. The respondents listed several other activities that they felt were useful for gaining or maintaining knowledge of the health sciences. Seven felt that speaking with users of the libraries was useful, four felt that talking to colleagues was useful, and four felt that answering reference questions was useful. Teaching, following radio or television news, reading newspapers, and attending conferences aimed either at

librarians or health professionals were also listed by more than one respondent.

DISCUSSION

The first goal of this study was to find out if subject knowledge was important to academic health sciences librarians. According to the respondents, subject knowledge has continued to be important; computerization and changes in information retrieval did not seem to have eliminated the need for it.

As for the second goal, to determine how the librarians went about acquiring subject knowledge, these results indicated that obtaining a degree in a health sciences field was not a method of choice; few respondents felt the need for a degree in a health sciences field. This finding actually runs counter to the informationist trend, which would demand more formal health sciences training for information professionals. Hooper-Lane remarked that university degrees quickly become out of date, so it is possible that this was why respondents did not see a health sciences degree as important [9]. However, because very few of them actually held such degrees, it is also possible that the respondents simply did not know how much a subject degree would help them. Liebman Gibb's study of science librarians found that those who held degrees in the area they served felt that they were able to answer reference questions more quickly and easily than if they did not have a degree [11].

Although few saw the need for a subject degree, nearly all felt that it was important to acquire subject knowledge and all spent at least some time every week doing so. Indeed, they reported spending an average of 6.0 hours, more than the 4.7 hours spent by the chemistry librarians in Hooper-Lane's study [9]. Because of the relatively low number of respondents in this study however, the variance was high. A larger sample of health sciences librarians would make this figure more meaningful.

Respondents felt that traditional ways to become informed—reading journals, independent study, and participating in professional associations—were among the best ways to gain subject knowledge, but reading Websites was considered just as useful.

Responses to this survey indicated that professional organizations such as the Canadian Health Libraries Association and Medical Library Association were meeting the needs, or at least were providing the best opportunities, for their members to learn about the health sciences. However, it also indicated that they have a continuing obligation to do so.

Those librarians who listed administration as a primary responsibility spent the least amount of time (an average of 5.9 hours per week) on continuing education activities. As an administrator, one librarian reported spending less time keeping up to date with the literature than as a reference librarian, because it was less important to do this. However, even those administrators who indicated that administration was their primary function devoted at least two hours per week

to continuing education. All academic health sciences librarians, then, should take the time to become informed about the fields they serve, and library administrators should support them in their efforts to do so.

CONCLUSION

Subject knowledge is important to Canadian academic health sciences librarians. While more research needs to be done with a larger, perhaps North America-wide, sample, this study shows that Canadian academic health sciences librarians are devoting a substantial amount of time to increasing and maintaining their knowledge of the health sciences and that they are using a variety of means to do so.

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APPENDIX

Subject knowledge and academic health sciences librarians

1. Apart from library and information science, in which subject(s) (e.g., history, psychology) is/are your degree(s)?

2. How important do you feel it is that your position be filled by someone who has a degree in a health sciences field (nursing, medicine, dentistry, pharmacy, physiotherapy, etc.)?

- ☐ Very important
- ☐ Somewhat important
- ☐ Not very important
- ☐ Not at all important

Are there areas of study other than the health sciences that you consider more important to your position? Equally important? Please explain.

3. To which of the following electronic newsletters do you subscribe? (Please check all that apply.)

- ☐ Bibliosanté
- ☐ CANMEDLIB
- ☐ Newsletter of the Réseau québécois biblio-santé of ASTED's section santé
- ☐ MEDLIB-L
- ☐ STS-L
- ☐ None

Are there other electronic newsletters on the topic of health sciences or science librarianship to which you subscribe? Please list them here.

4. Which of the following weekly science or health sciences journals or magazines do you read or browse at least *once a month*? (Please check all that apply.)

- ☐ *BMJ*
- ☐ *Canadian Medical Association Journal*
- ☐ *JAMA*
- ☐ *Lancet*
- ☐ *Medical Post*
- ☐ *Nature*
- ☐ *New England Journal of Medicine*
- ☐ *New Scientist*
- ☐ *Science*
- ☐ *Science News*
- ☐ None

5. Which of the following monthly science or health sciences journals or magazines do you read or browse at least *once every three months*? (Please check all that apply.)

- ☐ *Canadian Nurse*
- ☐ *Discover*
- ☐ *Journal of the American Dental Association*
- ☐ *Journal of the Canadian Dental Association*
- ☐ *Nursing*
- ☐ *Popular Science*
- ☐ *Québec Science*
- ☐ *Quintessence International*
- ☐ None

Are there science or health sciences journals or magazines other than those listed in the previous questions that you read or browse regularly (i.e., at least once per month if a weekly publication or once every three

months if a monthly publication)? Please list them here.

6. To which health sciences or science librarianship professional organizations do you belong? (Please check all that apply.)

- ☐ Association of College and Research Libraries' Science and Technology Section
- ☐ ASTED's Réseau québécois biblio-santé
- ☐ Canadian Health Libraries Association
- ☐ Medical Library Association
- ☐ Special Libraries Association's Biomedical and Life Sciences Division
- ☐ Special Libraries Association's Science-Technology Division
- ☐ None

Do you belong to any other health sciences library or science library professional associations? Please list them here.

7. Are you a member of the Academy of Health Information Professionals (AHIP)?

- ☐ Yes
- ☐ No

8. Which of the following radio or television programs do you listen to or watch once a month or more? (Please check all that apply.)

- ☐ *Découverte*
- ☐ *Les années lumière*
- ☐ *Nature of Things*
- ☐ *Noxa*
- ☐ *Quirks and Quarks*
- ☐ *Scientific American Frontiers*
- ☐ None

Do you watch or listen to other health sciences or science-related television or radio shows at least once a month?

9. Do you visit any science or health-related Websites on a weekly or more frequent basis? If yes, which ones? Please provide either the URL or Website name.

10. Please estimate how many hours you spend per week doing the activities mentioned in the previous questions (reading electronic newsletters, reading or browsing journals, watching television or radio programs, visiting Websites, participating in activities organized by professional associations).

11. Are you currently taking any university or community college classes in the science or health field? If so, in which area(s) (e.g., nutrition, medical terminology)?

12. To what extent is keeping current with the scientific or medical literature important to doing your job?

- ☐ Very important
- ☐ Somewhat important
- ☐ Not very important
- ☐ Not at all important

13. How useful do you find the following activities are for gaining or maintaining knowledge of the health sciences?

Electronic newsletters:

- ☐ Not at all useful
- ☐ Not very useful
- ☐ Somewhat useful

☐ Very useful

Journals or magazines:

☐ Not at all useful

☐ Not very useful

☐ Somewhat useful

☐ Very useful

Professional organizations:

☐ Not at all useful

☐ Not very useful

☐ Somewhat useful

☐ Very useful

Television or radio shows:

☐ Not at all useful

☐ Not very useful

☐ Somewhat useful

☐ Very useful

Websites:

☐ Not at all useful

☐ Not very useful

☐ Somewhat useful

☐ Very useful

University classes:

☐ Not at all useful

☐ Not very useful

☐ Somewhat useful

☐ Very useful

Independent study (i.e., study of textbooks, etc., without being registered in a formal class):

☐ Not at all useful

☐ Not very useful

☐ Somewhat useful

☐ Very useful

Are there other activities that you find useful for this purpose? Please list them here and indicate how useful you find them.

14. What is/are your primary responsibility/responsibilities? (Please check all that apply.)

☐ Administration

☐ Cataloging

☐ Collection development

☐ Interlibrary loan

☐ Reference

☐ User education

If your primary responsibility/responsibilities was/were not listed above, please list them here.

15. How long have you worked in health sciences or science libraries?

☐ Less than 2 years

☐ 2–5 years

☐ 6–10 years

☐ 11–15 years

☐ More than 15 years

Thank you very much for answering this questionnaire.